

STUDIES UPON REMOVAL OF LEAD CATION FROM WASTEWATER COMING BY SPENT ACID SOLUTION OF ELECTROPLATING WORK

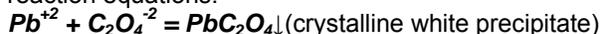
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EXTENDED ABSTRACT

Crystalline form of lead oxalate was extracted from wastewater, in specifically conditions as regarding pH, acid oxalic dose, concentration of lead ion and temperature due to low value of solubility product of lead oxalate. By these method it was possible a treatment method, by chemical precipitation upon waste solutions and wastewater, also recovery transitional metal Pb. The work parameters were: pH 5,5 dose of oxalic acid 100% excess, ion concentration, 1000mgPb/L, temperature 20°C. White crystalline precipitate of lead oxalate was washed, dried, and investigated through chemical methods, and thermal analysis, flame atomic absorption and FT-IR method, in order to be established chemical composition, and technological conditions for obtaining lead oxalate or lead oxide with 99% recovery degree.

The recovery purging process of lead as insoluble crystalline precipitate lead oxalate, is done in the following reaction equations:



The recovery efficiency of the cation has been calculated using the formula:

$$\alpha, \% = \frac{C_{i, Me^{2+}} - C_{f, Me^{2+}}}{C_{f, Me^{2+}}} \cdot 100 \quad (1)$$

where:

α = percentage recovery degree, %

$C_{i, Me^{2+}}$ = concentration of the cation lead, in [mgPb²⁺/L] before the precipitation with oxalic acid

$C_{f, Me^{2+}}$ concentration of the cation lead, in [mgPb²⁺/L] after the precipitation as an oxalate

Has been monitored the influence of various parameter such as reaction mass pH, dose of precipitation reagent, and temperature, upon the α . parameter [10,11].

Table 1. Values of lead standards concentrations and absorbances

Neim of test	Conc. Pb ²⁺ (mg/L)	Absorbance	RSD (%)
Pb blank	0,000	0,000	>99
Pb . St. 1	0,500	0,093	0,1
Pb . St. 2	1,000	0,175	0,4
Pb. St. 3	3,000	0,496	0,4
Pb St..check 0,4	0,422	0,076	1,2
Pb St.. check 0,2	0,20	0,041T	0,7

The technical parameters and technical conditions for a good measurement of initial and finally concentrations of lead cations for ThermoElectron M Serie M5 Dual, were:

- $\lambda=217,0$ nm
- Flame: air- C₂H₂, : 15,7 mm(high's flame)
- Acetylene flow: C₂H₂: 0,9 L/min
- Number of readings: 3